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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/200,495	11/25/98	VAN BUSKIRK	P 2771-337(PC8

MMC2/0421

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EXAMINER	
HU,S	
ART UNIT	**PAPER NUMBER**
2811	

DATE MAILED: 04/21/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/200,495	Applicant(s) Buskirk et al.
	Examiner Shouxiang Hu	Group Art Unit 2811

☒ Responsive to communication(s) filed on *Feb 19, 1999*

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *three* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-50* is/are pending in the applicat

Of the above, claim(s) *1-39* is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *40-50* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-39 drawn to a process, classified in class 438, subclass 240.

II. Claims 40-50 drawn to a capacitor, classified in class 257, subclass 295.

2. The inventions are distinct, each from the other because of the following reasons: Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of the Group II invention would not necessarily imply unpatentability of the Group I invention, since the device of the Group II invention could be made by processes materially different from those of the Group I invention, for example, the product could be made by forming the high dielectric with annealing in oxygen after the top electrode is deposited rather than during or before the top electrode is formed

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, the search required for Group I is not required for Group II, and separated examination would be required, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Steven Hultquist on 3/13/2000 a provisional election was made with traverse to prosecute the invention of Group II, claims 40-50. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 40-50 are rejected as claim 40 recites the limitation "said surface". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 40-44, insofar as in compliance with 35 U.S.C.112, are rejected under 35 U.S.C. 102(e) as being anticipated by Aoyama et al. (5,852,307).

Aoyama et al. (5,852,307) disclose a microelectronic device structure (Figs. 15-17), comprising: a top electrode layer (8, Ru oxide) on a ferroelectric film material. It is noted that the ferroelectric film material (8, Ru oxide) at its surface and in the vicinity of thereof is inherently substantially stoichiometrically complete in oxygen concentration, as Aoyama et al. (5,852,307) further disclose that the top electrode layer is deposited in an oxygen-containing atmosphere (see col. 11, lines 61-67 and col. 12, lines 1-2).

Regarding claims 41-44, Aoyama et al. (5,852,307) also disclose that the ferroelectric film material can be formed with BST and PZT (see col. 19, lines 46-58).

10. Claims 45-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. (5,852,307).

The disclosure of Aoyama et al. (5,852,307) is discussed as applied to claims 40-44. Aoyama et al. (5,852,307) do not expressly disclose that the ferroelectric film material can be formed with a strontium bismuth tantalate material; and, that the top electrode layer comprises a

material selected from Pt, Ir, Pd, Rh, their oxides or their alloys. It is noted that it is old and well known in the art that ferroelectric film material can be formed with a strontium bismuth tantalate material; and, that each of the materials of Pt, Ir, Pd, Rh, their oxides and their alloys is one of the commonly used materials for the top capacitor electrode layer.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make the microelectronic device of Aoyama et al. (5,852,307) with the ferroelectric film material being formed with a strontium bismuth tantalate material, and/or, with top electrode layer being made of a material selected from Pt, Ir, Pd, Rh, their oxides and their alloys, so that more design choices and better process flexibility would be obtained.

11. Claims 40-44 and 46-50, insofar as in compliance with 35 U.S.C.112, are further rejected under 35 U.S.C. 102(e) as being anticipated by Nishioka (5,973,911).

Nishioka (5,973,911) discloses a microelectronic device structure (Figs. 4-6), comprising: a top electrode layer (6, Pt) on a ferroelectric film material. It is noted that the ferroelectric film material (6, Pt) at its surface and in the vicinity of thereof is inherently substantially stoichiometrically complete in oxygen concentration, as Nishioka (5,973,911) further discloses that the ferroelectric layer is annealed in oxygen before and after the top electrode layer is deposited (see col. 2, lines 11-14).

Regarding claims 41-44, Nishioka (5,973,911) also discloses that the ferroelectric film material can be formed with BST and PZT (see col. 4, lines 14-18).

Regarding claims 47-50, Nishioka (5,973,911) also discloses that the top electrode layer can also be formed with Pt oxide, Ir or Ir oxide (see col. 4, lines 23-26).

12. Claims 45 is further rejected under 35 U.S.C. 103(a) as being unpatentable over Nishioka (5,973,911).

The disclosure of Nishioka (5,973,911) is discussed as applied to claims 40-44 and 46-50. Although Nishioka (5,973,911) does not expressly disclose that the ferroelectric film material can be formed with a strontium bismuth tantalate material, it is noted that it is old and well known in the art that ferroelectric film material can be formed with a strontium bismuth tantalate material.

Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to make the microelectronic device of Nishioka (5,973,911) with the ferroelectric film material being formed with a strontium bismuth tantalate material, so that more design choices and better process flexibility would be obtained.

Conclusion

13. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax

Center number is (703) 308-7722 or 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to ***Shouxiang Hu*** whose telephone number is **(703) 306-5729**. The Examiner is in the Office generally between the hours of 8:00AM to 5:30PM (Eastern Standard Time) Tuesday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **(703) 308-0956**.

Shouxiang Hu

April 13, 2000

Tom Thomas
Supervisory Patent Examiner
Technology Center 2800